REMARKS

Claims 97, 130, 132-135, as amended, and new claim 172 are pending in the above-captioned application for the Examiner's review and consideration. Applicants respectfully submit that claims 164-171, which were withdrawn by the Examiner in the most recent Office Action dated January 23, 2003, should also be pending in this application, a contention which is discussed more completely below.

Claims 98-129, 131, and 136-163 were canceled without prejudice. Claim 97 was amended to more particularly and distinctly recite the invention, in particular to include the subject matter of now-canceled claim 131, *i.e.*, that the at least one birefringent and anisotropically absorbing light layer has a thickness such that an output of the polarizer coincides with an interference extremum for at least one linearly-polarized light component. New claim 172 was added to recite that at least one refractive index of the at least one birefringent and anisotropically absorbing layer has a maximal value of at least 1.9. Support for this new claim can be found, *e.g.*, in the instant specification, at page 11, lines 24-26. As no new matter is added by these claim amendments or new claims, Applicants respectfully submit that their entry into the record of the above-captioned applicaiton is warranted at this time.

Applicants further note that claims 130-134 were improperly indicated as being withdrawn by the Examiner on page 1 of the Office Action dated August 13, 2002 (Paper #17). In the prior Office Action dated March 12, 2002 (Paper #15), on the top of page 6, the Examiner acknowledged that claims 130-134 are generic to the claims of Groups I-III. Since Applicants elected claims 97-102 of Group I (with traverse), and since claims 130-134 are generic to the claims of that group, Applicants respectfully submit that they should not have been withdrawn in the Office Action dated August 13, 2002 and that these claims (except for claim 131, which is cancelled without prejudice herein) are properly pending in this application.

The Election/Lack of UnityRequirements Are Improper and Should be Withdrawn

Claims 164-171 were withdrawn from consideration by the Examiner because they were allegedly directed to an invention that lacks unity with the

invention originally claimed and/or elected with traverse. The Examiner indicated on page 2 of the Final Office Action that evidence of lack of unity between the groups is based upon the disclosures of two U.S. Patent Nos. 5,739,296 to Gvon *et al.* ("Gvon") and 5,712,024 to Okuzaki *et al.* ("Okuzaki"). The Examiner further indicated that the combination of these references are found to disclose the features of previously-filed claim 97 and, as such, the claimed invention allegedly does not define a contribution over the prior art. Indeed, in the Office Action dated August 13, 2002, in which the earlier restriction (*i.e.*, from the Office Action dated March 12, 2002) was made final, the Examiner indicated that the restriction was proper (and that Applicants' argument was not persuasive) "because the concept is obvious over the two references cited above" (*i.e.*, Gvon and Okuzaki). Applicants traverse this restriction and reiterate their traversal of **all previous restrictions** for the reasons set forth below.

Applicants submit that the "special technical feature" of claims 164-171 is shared with claim 97, as previously presented, *i.e.*, a polarizer containing a layer that is birefringent, anisotropically absorbing, and abnormally dispersive (meaning that at least one refractive index grows as the wavelength increases, at least within a certain range of wavelengths of light). This "special technical feature" was recited in claim 131, now cancelled, which depended from claim 97, as previously presented. This feature of abnormal dispersion provides higher efficiency of, and a more simple construction for, the instantly claimed polarizer over the prior art. *See, e.g.*, the Inventor's Rule 132 Declaration, attached hereto, at ¶¶9-10, pages 4-5).

Applicants respectfully draw the Examiner's attention to the English translation of Russian Federation Application No. 98101616 ("the '616 application," a copy of which is also attached hereto for the Examiner's convenience), which contains the following text:

> The distinguishing feature of the invention is at least one anisotropically absorbing birefringent layer having at least one refractive index that increases as the polarized light wavelength grows.

See the '616 application translation at page 4, lines 22-24 (the same text is recited, verbatim, in the instant specification at page 9, lines 8-14). Even the subject matter of

claim 131, now cancelled and incorporated into claim 97, as amended, is supported by the instant specification. *See* the instant specification at page 4, lines 14-21.

Applicants respectfully assert that the "at least one birefringent and anisotropically absorbing layer having at least one refractive index that grows as the polarizable light wavelength increases at least at a certain range of wavelengths" of previously-submitted claim 97 is a proper unifying component and that claims 164-171 that also include this feature are not directed to a distinct invention requiring a lack of unity objection. *See, e.g.*, Section entitled "The Pending Claims, As Amended, Are Not Obvious Over the Cited Art," *infra*. As a result, Applicants respectfully request reconsideration and withdrawal of the lack of unity requirement, which Applicants further request should be accompanied by a similar reconsideration and withdrawal of the restriction requirement and constructive election (repeatedly traversed by Applicants).

For any or all of the foregoing reasons, Applicants respectfully submit that the lack of unity/restriction requirements were improper from the beginning and that claims 164-171, as well as the previously restricted claims, should be re-unified and recognized as presently pending in the instant application.

The Pending Claims, As Amended, Are Not Obvious Over the Cited Art

In the Final Office Action dated January 23, 2003, claims 97-102 and 135 were rejected as being obvious over Gvon, in view of Okuzaki, for the reasons set forth on pages 3-6 thereof. Applicants respectfully traverse this rejection for the reasons set forth below. Applicants have submitted herewith a Rule 132 Declaration supporting their traversal of the obviousness rejection and delineating the non-obviousness of the combination of birefringence, anisotropic absorption, and a refractive index that increases with increasing wavelengths over a certain range.

Gvon teaches "thermostable and lightfast dichroic polarizers which are based on polarizing coatings and which have high polarizing characteristics." *See* Gvon, first sentence of the Summary of the Invention. The polarizing coatings of Gvon "are formed from dyestuffs which provide a stable liquid crystalline phase in a wide range of concentrations, temperatures and pH values" when they are placed on a

support surface, or between two support surfaces, and oriented. *See Id.* at Abstract. According to Gvon, the dyestuffs are water-soluble, organic, and "of the formula {Chromogen} $(SO_3M)_n$ and their mixtures." *See Id.* at column 5, lines 45-46.

Okuzaki teaches a laminated anti-reflection film composed of an uppermost film layer containing coloring matter having an absorbing peak between 700-900 nm and/or between 600-700 nm and a next film layer containing coloring matter having an absorbing peak between 500-600 nm. *See* Okuzaki at Abstract. According to Okuzaki, the uppermost film is predominantly a SiO_2 (glass) film, and the adjoining film is predominantly a SnO_2, ZnO, or ITO (indium tin oxide) film. *See Id.* at column 8, lines 41-55.

The Examiner alleged that the Gvon teaches a polarizer comprising a birefringent layer on a birefringent polymeric film substrate. *See* Final Office Action at page 3. The Examiner also alleged that Gvon teaches that a polarizing coating can be applied on a reflecting layer to have an aligning (orienting) influence that allows omission of an additional alignment layer used with conventional polarizers. *See Id.* at page 4. The Examiner further alleged that the polarizing coating of Gvon can include dyestuffs that are inherently anisotropically absorbing because of their dichroic character and the presence of a polarization axis, which is allegedly shown by their reflectivity of certain wavelengths of light (*i.e.*, color) and their selective absorbance in the visible electromagnetic spectrum (*i.e.*, as indicated by an absorption peak therein). *See Id.* The Examiner notes, however, that Gvon fails to specifically disclose abnormal dispersion, *i.e.*, at least one refractive index that increases as the light wavelength increases. *See Id.*

The Examiner alleged that Okuzaki teaches a dye that has anisotropic absorbance, as indicated by a peak in the refractive index vs. wavelength curve. The Examiner also alleged that the anisotropic absorbance of the Okuzaki dye necessarily also contained an abnormal dispersion, *i.e.*, an increase of refractive index on the upside of the peak in the 400-700 nm range of incident wavelength. *See* Final Office Action at pages 4-5.

The Examiner then concluded that, although the abnormal dispersion was not disclosed *per se* in Gvon, the combination of Gvon and Okuzaki rendered the claims obvious. *See Id.* Applicants respectfully trasverse.

Applicants respectfully submit that claim 97, as previously presented, required three features of the polarizer layer: (1) it must be birefringent; (2) it must be anisotropically absorbing; and (3) it must have abnormal dispersion, which is defined as an increase in at least one refractive index coefficient with increasing wavelength. Applicants respectfully submit that neither Gvon nor Okuzaki, individually or in combination, discloses or suggests combining these specific features in a poalrizer layer, as presently claimed.

The Examiner alleged that Gvon teaches that its polarizing coating is both anisotropically absorbing ***and*** birefringent. Applicants respectfully disagree and note that Gvon does not mention birefringence with respect to its polarizing coating, but only suggests that ***when one of the substrates is polymeric***, *e.g.*, is poly(ethylene terephthalate) or PET, the ***substrate***, not the polarizing coating, can be birefringent. *See* Gvon at column 9, lines 62-67. Applicants can find no disclosure or suggestion in Gvon that a ***polarizing or coating layer*** can exhibit birefringence properties, much less in combination with anisotropy and abnormal dispersion, as presently claimed Applicants respectfully request that the Examiner not just cursorily indicate that the ***polarizing coating*** of Gvon is birefringent, but that the Examiner direct Applicants to the specific teaching in Gvon of birefringence in ***a polarizing or coating layer***. Applicants respectfully note that, although Gvon discloses an anisotropically absorbing layer, that does not *a priori* indicate that the layer also exhibits birefringence. *See* Inventors' Rule 132 Declaration at ¶9. In addition, there is absolutely no disclosure or suggestion in Gvon to combine anisotropic absorbance with birefringence in a polarizing coating layer, much less combined with the quality of abnormal dispersion, as presently claimed. In order to find birefringence in such a layer, it would be necessary, at a minimum, to combine the birefringent quality of the substrate and the anisotropically absorbing quality of the coating and put them into a single layer. There is absolutely no such suggestion provided in Gvon.

Applicants also submit that Okuzaki does not remedy the deficiencies of Gvon with respect to birefringence of the non-substrate layer. Although the Examiner asserted that Okuzaki is being used as a teaching reference for the alleged "inherency" of the combination of abnormal dispersion and anisotropic absorption (*see* Final Office Action at pages 5-6), Applicants respectfully submit that the combination of Gvon and Okuzaki must at least disclose or suggest all the elements of

the instantly pending claims. However, Okuzaki does not disclose birefringence at all, whether in the substrate or in its dual-layer, laminated, anti-reflection film.

Unlike the polarizer disclosed in Gvon, the polarizer used in the claimed invention also requires "abnormal dispersion," *i.e.*, the birefringent and anisotropically absorbing layer has a refraction index that increases as the wavelength of polarizable light increases over a range of the spectrum of wavelengths (*See, e.g.*, the instant specification, page 56, lines 3-11). There is absolutely no disclosure or suggestion in Gvon that the polarizer disclosed therein should have the property of "abnormal dispersion," as presently claimed. As shown in the attached Declaration of the Inventors, there is no suggestion in Gvon to select the property of abnormal dispersion over normal dispersion in coating layers. *See, e.g.*, the Inventors' Rule 132 Declaration at Appendix, Figs. 1-2; *see also id.* at ¶¶8-10.

Applicants also submit that Okuzaki does not remedy the deficiencies of Gvon with respect to teaching abnormal dispersion. Although the Examiner asserts that Okuzaki is being used as a teaching reference for the alleged "inherency" of the combination of abnormal dispersion and anisotropic absorption (*see* Final Office Action at pages 5-6) and not to remedy any deficiencies in Gvon, Applicants respectfully point out the flaw in the Examiner's logic in this respect.

Applicants respectfully submit that one of ordinary skill in the art could not possibly predict *a priori*, based on Okuzaki, whether the polarizing coating of Gvon exhibits the abnormal dispersion in the polarizing coating of Gvon, much less the specific combination of birefringence, abnormal disperson, and anisotropic absorption. Applicants provide herewith data indicating that the presence of a dye taught by Okuzaki is not sufficient for attaining abnormal dispersion in a dyed film or in a dye layer. *See* the Inventors' Rule 132 Declaration at ¶¶8-10. This conclusion was confirmed experimentally and with calculations on dyes used in Gvon. *See Id.*; *see also id.* at Appendix, Figs. 1-2. Thus, the combination of Gvon and Okuzaki also does not teach the specific combination of birefringence with abnormal dispersion, much less with anisotropic absorption.

Similarly, neither Gvon nor Okuzaki teach to combine anisotropic absorbance with birefringence and abnormal absorption. While Gvon specifically teaches its coating layer should be anisotropically absorbing, Okuzaki is silent with respect to whether the absorption is isotropic or anisotropic. There is nothing in either

reference that woul motivate one of ordinary skill in the art to select anisotropic absorption in a polarizing/coating layer, to combine it with abnormal dispersion, and then to further combine it with birefringence. Contrary to the Examiner's cursory analysis on page 4 of the Final Office Action, the mere appearance of an absorption peak in the refractive index-wavelength plot for a material does not indicate whether that material is ***anisotropically*** absorbing or ***isotropically*** absorbing, but only that the material absorbs light at a particular (range of) wavelength(s). *See* the Inventors' Rule 132 Declaration at ¶8. Therefore, from the disclosure of Okuzaki, it is not obvious that the presence of a dye having some absorption peak, whether isotropic or anisotropic, in the film must ***necessarily*** exhibit abnormal dispersion.

Applicants, however, have selected a combination of birefringence, anisotropic absorption, and abnormal dispersion in the instantly claimed polarizer layer, which have unexpected advantages. The combination of abnormal dispersion with birefringence and anisotropic absorption in a polarizer layer results in a desirably high value at least of one refractive index and in a significant growth of birefringence, which greatly exceed the same parameters for, *e.g.*, polymeric materials, that were used for the production of prior art polarizers of different types, particularly of the interference type. *See* the Inventors' Rule 132 Declaration at ¶¶8-10; *see also* the instant specification at page 9, lines 12-18. According to the instant specification, the employment of a birefringent and anisotropically absorbing layer with abnormal dispersion, also allows preparation of high efficiency polarizers of different types. *See, e.g.*, the attached Inventors' Rule 132 Declaration at ¶8. Indeed, the use of a birefringent and anisotropically absorbing layer with abnormal dispersion providing a high value of at least one refractive index is particularly useful in a polarizer of the interference type with small number of layers (*i.e.*, not more than about 10), in comparison with prior art wherein more than 300 layers (up to 600) is used. *See* the instant specification at page 4, lines 16-18 and at page 9, line 28 through page 10, line 5. Neither Gvon nor Okuzaki, individually or in combination, discloses or suggests a polarizer layer having a combination of birefringence, anisotropic absorption, and abnormal dispersion, or the unexpected advantages detailed above.

Applicants submit that the Examiner is improperly using hindsight to pick and choose the combination of birefringence, anisotropic absorption, and abnormal dispersion qualities of the dyes therefrom. Hindsight cannot be used to

reject a claim as obvious. *In re Sernaker*, 702 F.2d 989, 994 (Fed. Cir. 1983); *In re Rinehart*, 531 F.2d 1048 (CCPA 1976); *In re Imperato*, 486 F.2d 585 (CCPA 1973); *In re Adams*, 356 F.2d 998 (CCPA 1966). Consequently, it is legally improper to select from the prior art the separate components of the inventor's combination, using the blueprint supplied by the inventor. *C.R. Bard Inc. v. M3 Systems, Inc.*, 157 F.3d 1340, 1352 (Fed. Cir. 1998) citing *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1556 (Fed. Cir. 1985) (holding the prior art must suggest to one of ordinary skill in the art the desirability of the claimed combination). The Federal Circuit has suggested that "the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or modification to combine prior art references." *Id.* This is because "when prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself." *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1142 (Fed. Cir. 1985).

Consequently, Applicants respectfully submit that, because Okuzaki teaches dyes without reference to the nature of their absorption (*e.g.*, that can have ***any*** absorption, isotropic or anisotropic) and teaches that the dispersion of these dyes may be either abnormal or normal (*i.e.*, that the refractive index may have ***any trend***, or no trend, with respect to wavelength), one of ordinary skill in the art would not have been motivated to combine the references in the way the Examiner has set forth and would not have had a reasonable expectation of attaining the unexpected advantages described above. Applicants respectfully submit that one of ordinary skill in the art, because of the wide range of options disclosed in Okuzaki and because of the lack of interrelation of important properties between Okuzaki and Gvon, could only have arrived at the claimed combination of the three claimed features in a polarizer layer by using the Applicants' disclosure as a roadmap to choose elements from these two references, namely the specific combination of birefringence, anisotropic absorption, and abnormal dispersion in a polarizer layer, as presently claimed. There is, however, absolutely no suggestion in either Gvon or Okuzaki to select the specific combination of birefringence, anisotropic absorption, and abnormal dispersion, as presently claimed. Moreover, as noted above, the cited references provide no reasonable expectation that such a combination would provide an

improved polarizer layer. Accordingly, Applicants respectfully submit that the Examiner has not made a *prima facie* case of obviousness.

In addition, claim 97, as presently amended, requires a fourth feature, *i.e.*, that the thickness of the layer be such that an output of the polarizer coincides with an interference extremum for at least one linearly-polarized light component. The thickness feature of the presently amended claims advantageously results in an increased efficiency in forming the polarizer by simplification of its construction. *See, e.g.*, the instant specification at pages 53-58.

Applicants respectfully submit that neither Gvon nor Okuzaki disclose or suggest that the thickness of the birefringent and anisotropically absorbing layer be such that the output of the polarizer coincides with an interference extremum for at least one linearly-polarized light component, as required by presently amended claim 97 (cancelled claim 131). In fact, Applicants cannot find in the cited prior art of record, nor are they aware of, any reference to this fourth element of the instantly pending claims.

For any of the foregoing reasons, Applicants respectfully submit that the presently amended claims are not obvious over Gvon and Okuzaki, alone or in combination. As a result, Applicants respectfully request that the obviousness rejection be withdrawn and that the lack of unity of invention restriction also be withdrawn to allow Applicants to re-present all or some of the previously restricted claims in this application.

Applicants respectfully submit that the entire application is now in condition for allowance, early notice of which would be greatly appreciated. Should the Examiner disagree, Applicants request that the Examiner contact the undersigned for a telephonic or in-person interview to resolve any remaining issues regarding the prosecution of the above-captioned application.

A Request for Continued Exmaination and a Petition for Extension of Time to reply to the Final Office Action dated January 23, 2003 are submitted herewith, along with provision for the required fees. No other fee is believed to be due for the submission of this Preliminary Amendment. Should any other fee be

required, however, please charge the required fee to Pennie & Edmonds LLP Deposit Account No. 16-1150.

Respectfully submitted,

Date: May 23, 2003

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Attachments

APPENDIX A

Changes to the claims

The pending claims were rewritten as follows:

97. (Amended) A polarizer, comprising at least one birefringent and anisotropically absorbing layer ~~characterized in that at least one birefingement layer is the anisotropically absorbing one and has at least one refraction~~ having a first refractive index that ~~grows~~ increases as the polarizable light wavelength increases at least ~~at~~ for a certain range of ~~the~~ wavelengths, and wherein the at least one birefringent and anisotropically absorbing layer has a thickness such that an output of the polarizer coincides with an interference extremum of a linearly-polarized light component.

130. (Amended) The polarizer according to ~~any one of claims 97, 103, 113, wherein at least one birefringent and anisotropically absorbing layer has at least one refraction~~ claim 97, wherein the first refractive index ~~that~~ is directly proportional to the polarized light wavelength at least ~~at a~~ for the certain range of ~~the~~ wavelengths.

132. (Amended) The polarizer according to claim ~~131~~ 97, wherein the thickness of the at least one birefringent and anisotropically absorbing ~~light~~ layer ~~satisfies the condition of obtaining, at~~ is such that the output of the polarizer~~, the~~ coincides with an interference minimum for ~~one~~ a first linearly-polarized light component and ~~the~~ with an interference maximum for ~~the other orthogonal~~ a second linearly-polarized light component that is orthogonal to the first linearly-polarized light component.

133. (Amended) The polarizer according to any one of claims 97, ~~103, 113,~~ 130, or 132, further comprising an optically isotropic layer~~,~~ whose ~~refraction~~ refractive index coincides with, or is maximally proximate to ~~one of indices~~, a refractive index of the birefringent and anisotropically absorbing layer.

134. (Amended) The polarizer according to any one of claims 97, ~~103, 113,~~ 130, or 132, further comprising a second birefringent layer ~~one refraction~~ having a second refractive index ~~of which layer~~ that coincides with, or is maximally proximate to ~~one of indices~~, a refractive index of the birefringent and anisotropically

absorbing layer, ~~and the~~ wherein the second refractive ~~indices~~ index of the birefringent layer ~~and~~ is different from the first refractive index of the birefringent and anisotropically absorbing layer ~~differ from one another~~.

135. (Amended) The polarizer according to ~~any one of claims 97, 103, 113~~ claim 97, wherein the at least one birefringent and anisotropically absorbing layer is formed of:

~~of~~ at least one organic salt of a dichroic anionic dye ~~has~~ having the general formula: **{Chromogen}-(XO^-M^+)n**; wherein {Chromogen} is a dye chromophore system; wherein each X = CO, SO_2, OSO_2, or $OPO(O^-M^+)$; and wherein each M = is independently $RR'NH_2$, RR'R"NH, RR'R"R^N, or RR'R"^P; wherein each of R, R', R", and R^ = is independently CH_3, ClC_2H_4, C_2H_5, C_3H_7, C_4H_9, $C_6H_5CH_2$, substituted phenyl or heteroaryl, $YH-(CH_2-CH_2-Y)_m-CH_2CH_2$, such that Y = O, or NH, and such that m = 0-5, N-alkylpyridinium ~~cation~~, N-alkylchinolinium ~~cation~~, N-alkylimidazolinium-~~cation~~, or N-alkylthiazolinium-~~cation~~; and wherein n = 1-7;

~~or of~~ at least one asymmetric mixed salt of a dichroic anionic dye with different cations ~~of~~ having the general formula:

$$(M_1^+O^-X')_m-[M_1^+O^-X'-(CH_2)_p-Z]_g-\{Chromogen\}-[Z-(CH_2)_p-XO^-M^+]_f-(XO^-M^+)_n$$

wherein {Chromogen} is a dye chromophore system; wherein each Z = is independently SO_2NH, SO_2, CONH, CO, O, S, NH, or CH_2; wherein each p = is independently from 1-10; wherein each of f, g, n, and m are independently 0-9, ~~f = 0-9; g = 0-9; n = 0-9, m = 0-9, n+f = 1-10; m+g = 1-10;~~ wherein each of (n+f) and (m+g) are independently 1-10; wherein each of X, and X' are independently = CO, SO_2, OSO_2, or $PO(O^-M^+)$; wherein M ≠M_1, and wherein each M, and M_1 = are independently H, an inorganic cation ~~of the following type:~~ selected from the group consisting of NH_4, Li, Na, K, Cs, Mg, Ca, Ba, Fe, Ni, and Co, an organic cation ~~of the following type:~~ selected from the group consisting of RNH_3, $RR'NH_2$, RR'R"NH, RR'R"R*N, and RR'R"R*P, ~~where~~ such that each of R, R', R", and R* = are independently alkyl or substituted alkyl ~~of the following type:~~ groups selected from the group consisting of CH_3, ClC_2H_4, HOC_2H_4, C_2H_5, C_3H_7, and C_4H_9, $C_6H_5CH_2$, substituted phenyl or heteroaryl groups, $YH-(CH_2-CH_2-Y)_k-CH_2CH_2$, such that each

Y, is independently = O, or NH_2 and such that k = 0-10, or a heteroaromatic cation ~~of the following type~~ selected from the group consisting of N-alkylpyridinium, N-alkylchinolinium, N-alkylimidazolinium, and N-alkythiazolinium;

~~or of~~ at least one associate of a dichroic anionic dye with surface-active cation and/or amphoteric surfactant ~~of~~ having the general formula:

$$(M^+O^-X')_m\text{-}[M^+O^-X'\text{-}(CH_2)_p\text{-}Z]_g\text{-}\{Chromogen\}\text{-}[Z\text{-}(CH_2)_p\text{-}XO^-SUR]_f\text{-}(XO^-SUR)_n$$

wherein {Chromogen} is a dye chromophore system; wherein each Z is independently = SO_2NH, SO_2, CONH, CO, O, S, NH, or CH_2; wherein each p is independently from = 1-10; ~~f = 0-4; g = 0-9; n = 0-4, m = 0-9,~~ wherein each of f and n are independently 0-4; wherein each of g and m are independently 0-9; wherein (n+f) = 1-4; wherein (m+g) = 0-9; wherein each X, and X' are independently = CO, SO_2, OSO_2, or $PO(O^-M^+)$; wherein each M is independently = H, an inorganic cation ~~of the following type:~~ selected from the group consisting of NH_4, Li, Na, K, Cs, Mg, Ca, Ba, Fe, Ni, and Co, an organic cation selected from the group consisting of RNH_3, $RR'NH_2$, RR'R"NH, RR'R"R*N, and RR'R"R*P, wherein each of R, R', R", and R* are independently an = alkyl or substituted alkyl ~~of the following type:~~ group selected from the group consisting of CH_3 ClC_2H_4, HOC_2H_4, and C_2H_5 -$C_{10}H_{21}$, $C_6H_5CH_2$, a substituted phenyl or heteroaryl group, $YH\text{-}(CH_2\text{-}CH_2\text{-}Y)_k\text{-}CH_2CH_2$, such that each Y is independently = O or NH_2 and such that k = 0-10, a heteroaromatic cation ~~of the following type~~ selected from the group consisting of N-alkylpyridinium, N-alkylchinolinium, N-alkylimidazolinium, N-alkylthiazolinium, and $K'SUR^+$; wherein each SUR is independently = $KSUR^+$, $K'SUR^+$, or AmSUR; wherein $KSUR^+$ and $K'SUR^+$ are surface-active cations; and wherein AmSUR is an amphoteric surfactant;

~~or of~~ at least one associate of a dichroic cationic dye with a surface-active anion and/or an amphoteric surface-active dye ~~of~~ having the general formula:

$$(M^+O^-X)_m\text{-}[M^+O^-X'\text{-}(CH_2)_p\text{-}Z]_g\text{-}\{Chromogen^+\}\text{-}SUR$$

wherein {Chromogen$^+$} is a dye chromophore system; wherein each Z is independently = SO_2NH, SO_2, CONH, CO, O, S, NH, or CH_2; wherein each p is independently from = 1-10; wherein each of g and m are independently 0-1, such that ~~g = 0-1; m = 0-1;~~ m+g=1; wherein each of X and X' are independently = CO, SO_2,

OSO_2, or $PO(O^-M^+)$; wherein each M is independently = H, an inorganic cation ~~of the following type:~~ selected from the group consisting of NH_4, Li, Na, K, Cs, Mg, Ca, Ba, Fe, Ni, and Co, an organic cation ~~of the following type:~~ selected from the group consisting of RNH_3, $RR'NH_2$; RR'R"NH, RR'R"R*N, and RR'R"R*P; wherein each of R, R', R", and R* are independently an = alkyl or substituted alkyl ~~of the following type:~~ group selected from the group consisting of CH_3, ClC_2H_4, HOC_2H_4, and C_2H_5 - $C_{10}H_{21}$, $C_6H_5CH_2$, a substituted phenyl or heteroaryl group, $YH-(CH_2-CH_2-Y)_k-CH_2CH_2$, such that each Y is independently = O, or NH, and such that k = 0-10, a heteroaromatic cation ~~of the following type:~~ selected from the group consisting of N-alkylpyridinium, N-alkylchinolinium, N-alkylimidazolinium, N-alkylthiazolinium, and $KSUR^+$; ~~where:~~ wherein $KSUR^+$ is a surface-active cation; wherein SUR = ASUR, or AmSUR; ~~where:~~ wherein $ASUR^-$ is surface active cation; and wherein AmSUR is an amphoteric surfactant;

~~or~~ at least of one associate of a dichroic cationic dye with a surface-active cation and/or an amphoteric surfactant ~~of~~ having the general formula:

{Chromogen}-[Z-$(CH_2)_p$-X^+RR'R"SUR]$_n$

wherein {Chromogen} is a dye chromophore system; wherein each Z is independently = SO_2NH, SO_2, CONH, CO, O, S, NH, or CH_2; wherein each p is independently from = 1-10; wherein each X is independently = N, or P; wherein each of R, R', and R" = are independently an alkyl or substituted alkyl ~~of the following type:~~ group selected from the group consisting of CH_3, ClC_2H_4, HOC_2H_4, C_2H_5, and C_3H_7; wherein each SUR is independently = $ASUR^-$, or AmSUR; wherein $ASUR^-$ is a surface-active anion; wherein AmSUR is an amphoteric surfactant; and wherein n = 1-4;

~~or of~~ at least one water-insoluble dichroic dye and/or a pigment that do(es) not contain ionogenic or hydrophilic groups;

~~or of~~ at least one low-molecular weight thermotropic liquid-crystal substance being a dichroic dye or containing, as a component, a liquid-crystal and/or a dichroic dye other than a liquid-crystal dye, wherein the at least one low-molecular weight thermotropic liquid-crystal substance is vitrified ~~and vitrified in this or other manner, for example after application of a layer by curing using ultraviolet radiation~~;

~~or of~~ at least one polymer material other than liquid-crystal ~~one, with~~ polymer material, having a controlled degree of hydrophilicity, and having been dyed

with a dichroic dye and/or an iodine ~~compounds~~ compound;

~~or of~~ at least one polymer thermoptropic liquid-crystal and/or non-liquid crystal substance comprising solved in mass and/or chemically bonded with a polymer chain dichroic dyes;

~~or~~ at least ~~of~~ one dichroic dye capable of forming a lyotropic liquid-crystal phase;

~~or~~ at least ~~of~~ one polymeric dichroic dye ~~of the polymer structure~~;

~~or~~ at least ~~of~~ one water-soluble organic dye capable of forming a stable lyotropic liquid-crystal phase ~~of~~ having the general formula: **{Chromogen}-$(SO_3M)_n$**, wherein {Chromogen} is a dye chromophore system; wherein each M is independently = H~~,~~ or an inorganic cation; and wherein n = 1 to 7; or

~~or of their mixes~~ a mixture thereof.